

PLAN OF STUDY

FACULTY: MECHANICAL AND POWER ENGINEERING

MAIN FIELD OF STUDY: POWER ENGINEERING

EDUCATION LEVEL: 2nd level, Master of Science

FORM OF STUDIES: part-time

PROFILE: general academic

SPECIALIZATION: **RENEWABLE SOURCES OF ENERGY**

LANGUAGE OF STUDY: polish

Faculty Council Resolution of 20.09.2017
In effect since 01.10.2017

Plan of studies structure in point layout

30			
29		master	
28		individual	
27		student project	
26			
25			
24			master
23			thesis
22			
21			
20			
19			
18			
17			
16			
15			
14			
13			
12			
11			
10			master seminar
9			
8			
7			
6			
5			
4			
3	humanities		marketing and
2		foreign	management
1	foreign language	language	
	sem. 1	sem. 2	sem. 3
			sem. 4

basic and obligatory courses
general and obligatory courses
general and optional courses
obligatory main-field-of-study courses
optional main-field-of-study courses
optional/specialization courses

1. Set of obligatory and optional courses and groups of courses in semestral arrangement

Semester 1

Obligatory courses

number of ECTS points 14

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ENN0901	Probability Theory	1,2					K2ENG_W01	18	120	4	2	T	E			PD	Ob
2	ENN0901	Probability Theory		1,2				K2ENG_U05	18	120	4	3	T	Z		P	PD	Ob
3	ENN0195	Quantum Physics	1,8					K2ENG_W03	27	180	6	3	T	E			PD	Ob
Total			3	1,2					63	420	14	8						

Optional courses (minimum 90 hours in semester) number of ECTS points 16

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	JZL100589C JZL100846C JZL100847C	Foreign Language (continuation), level B+		0,6				K2ENG_U04	9	30	1	0,75	T	Z	O	P	KO	W
2	HNN100400BK	Humanities Course	0,6					K2ENG_W06 K2ENG_K02 K2ENG_K06	9	60	2	1	T	Z	O		KO	W
3	ENN0185	Physics of the Renewable Energy	1,2					S2OZE_W01	18	60	2	1	T	Z			S	W
4	ENN0185	Physics of the Renewable Energy		0,6				S2OZE_U01	9	60	2	1,5	T	Z		P	S	W
5	ENN0185	Physics of the Renewable Energy					0,6	S2OZE_U02	9	30	1	0,75	T	Z		P	S	W
6	ENN0174	Water Power Engineering	1,2					S2OZE_W03	18	60	2	1	T	Z			S	W
7	ENN0174	Water Power Engineering		0,6				S2OZE_U04	9	60	2	1,5	T	Z		P	S	W
8	ENN0174	Water Power Engineering					0,6	S2OZE_U05	9	120	4	3	T	Z		P	S	W
Total			3	1,8			0,6	0,6	90	480	16	10,5						

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – enter T, remote – enter Z

³Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁶ KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷ Optional – enter W, obligatory – enter Ob

Altogether in semester 1

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
6	3		0,6	0,6	153	900	30	18,5

Semester 2

Obligatory courses **number of ECTS points 7**

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ENN0503	Numerical Methods	1,8					K2ENG_W02	27	150	5	2,5	T	E			PD	Ob
2	ENN0503	Numerical Methods			1,2			K2ENG_U06	18	60	2	1,5	T	Z		P	PD	Ob
Total			1,8		1,2				45	210	7	4						

Optional courses (minimum 126 hours in semester) **number of ECTS points 23**

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	JZL100586C JZL100591C JZL100597C	Foreign Language (second), any level		1,8				K2ENG_U09	27	60	2	1,5	T	Z	O	P	KO	W
2	ENN1122	Power Production Systems and Technology From Biomass	1,2					S2OZE_W08	18	60	2	1	T	Z			S	W
3	ENN1122	Power Production Systems and Technology From Biomass		0,6				S2OZE_U10	9	60	2	1,5	T	Z		P	S	W
4	ENN1122	Power Production Systems and Technology From Biomass					0,6	S2OZE_U11	9	30	1	0,75	T	Z		P	S	W
5	ENN0356	Refrigeration Heating Systems	0,6					S2OZE_W05	9	30	1	0,5	T	Z			S	W
6	ENN0356	Refrigeration Heating Systems				0,6		S2OZE_U07	9	120	4	3	T	Z		P	S	W

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⁴University-wide course /group of courses – enter O

⁵Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

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⁷ Optional – enter W, obligatory – enter Ob

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
7	ENN0196	Photo-thermal Energy Conversion System	0,6					S2OZE_W09	9	30	1	0,5	T	Z			S	W
8	ENN0196	Photo-thermal Energy Conversion System				1,2		S2OZE_U12	18	210	7	5,25	T	Z		P	S	W
9	ENN0141	Geothermal Power Engineering	0,6					S2OZE_W07	9	30	1	0,5	T	Z			S	W
10	ENN0141	Geothermal Power Engineering		0,6				S2OZE_U09	9	60	2	1,5	T	Z		P	S	W
Total			3	3		1,8	0,6		126	690	23	16						

Altogether in semester 2

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
4,8	3	1,2	1,8	0,6	171	900	30	20

Semester 3

Obligatory courses number of ECTS points 11

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ENN0554	Mathematical Modelling of Energy Generation Installations	1,2					K2ENG_W05	18	120	4	2	T	E			K	Ob.
2	ENN0554	Mathematical Modelling of Energy Generation Installations			2,4			K2ENG_U07	36	120	4	3	T	Z		P	K	Ob.
3	ENN1113	New Generation Energy Technologies	1,2					K2ENG_W04	18	90	3	1,5	T	E			K	Ob.
Total			2,4		2,4				72	330	11	6,5						

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Optional courses (minimum 141 hours in semester) number of ECTS points 19

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ENN0571	Fuel Cell and Technology of Hydrogen Production	1,2					S2OZE_W02	18	60	2	1	T	Z			S	W
2	ENN0571	Fuel Cell and Technology of Hydrogen Production			0,6			S2OZE_U03	9	30	1	0,75	T	Z		P	S	W
3	ENN0306	Pollutants Emission Control	0,6					S2OZE_W04	9	60	2	1	T	Z			S	W
4	ENN0306	Pollutants Emission Control			1,2			S2OZE_U06	18	60	2	1,5	T	Z		P	S	W
5	ENN0131	Wind Power Plants	0,6					S2OZE_W06	9	30	1	0,5	T	Z			S	W
6	ENN0131	Wind Power Plants				1,2		S2OZE_U08	18	150	5	3,75	T	Z		P	S	W
7	ENN1364	Master Individual Student Project				4		K2ENG_U01 K2ENG_U03 K2ENG_K01 K2ENG_K04	60	180	6	1	T	Z		P	K	W
Total			2,4		1,8	5,2			141	570	19	9,5						

Altogether in semester 3

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
4,8		4,2	5,2		213	900	30	16

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Semester 4

Obligatory courses number of ECTS points 10

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ENN0702	Marketing and Management	1,2					K2ENG_W06	18	90	3	1,5	T	Z	O		KO	Ob
2	ENN1063	Energy Systems	1,2					K2ENG_W07	18	60	2	1	T	Z			K	Ob.
3	ENN1063	Energy Systems		0,6				K2ENG_U08	9	30	1	0,75	T	Z		P	K	Ob.
4	ENN1302	Environmental Management	1,2					K2ENG_W06 K2ENG_K02	18	60	2	1	T	Z			K	Ob.
5	ENN1381	Diploma Seminar					1,2	K2ENG_U01 K2ENG_U02 K2ENG_K01 K2ENG_K03 K2ENG_K04 K2ENG_K05	18	60	2	1,5	T	Z		P	K	Ob.
Total			3,6	0,6			1,2		81	300	10	5,75						

Optional courses number of ECTS points 20

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course/group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			universit y-wide ⁴	practical ⁵	kind ⁶	type ⁷
1	ENN1435	Master Thesis						K2ENG_U01 K2ENG_U02 K2ENG_U03 K2ENG_K01 K2ENG_K04 K2ENG_K05		600	20	4	T	Z		P	K	W
Total										600	20	4						

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Altogether in semester 4

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Number of ECTS points for BK classes ¹
lec	cl	lab	pr	sem				
3,6	0,6			1,2	81	900	30	9,75

2. Set of examinations in semestral arrangement

Course code	Names of courses ending with examination	Semester
ENN0195 ENN0901	1. Quantum Physics 2. Probability Theory	1
ENN0503	1. Numerical Methods	2
ENN0554 ENN1113	1. Mathematical Modelling of Energy Generation Installations 2. New Generation Energy Technologies	3

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	14
2	19
3	0